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Selective Migration in New Towns: Influence on Regional Accountability in Early School Leaving*

Kristof De Witte†

Chris Van Klaveren‡

Anton Smets§

Abstract

In an attempt to stop the rampant suburbanization, which countries experienced after World War II, a 'new town' policy was enrolled. As a major objective, and related to its origins, new towns were effective in attracting low and medium income households. Nowadays, cities and municipalities experience an increased accountability in which incentives are provided by 'naming and shaming'. This paper focuses on an issue where both historical and local policy come together: early school leaving. Using an iterative matching analysis, it suggests how to account for differences in population and regional characteristics. In other words, how to compare and interpret early school leaving in new towns in a more 'fair' way. The results point out that (statistically) mitigating historical differences is necessary, even though this does not necessarily means that 'naming' is replaced by 'shaming'.

JEL Codes: C13; I21; R23, R12

Keywords: Urban Economics; New Town; Early School Leaving; Naming and Shaming; Iterative Matching, Urban Planning

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†TIER, Maastricht University, P.O. BOX 616, 6200 MD Maastricht, The Netherlands, and KU Leuven, Naamsestraat 69, 3000 Leuven, Belgium. E-mail of the corresponding author: kristof.dewitte@econ.kuleuven.be.

‡TIER, Maastricht University, P.O. BOX 616, 6200 MD Maastricht, The Netherlands. E-mail: cp.vanklaveren@maastrichtuniversity.nl.

§Province of Flevoland, P.O. BOX 55, 8200 AB Lelystad, The Netherlands. E-mail: anton.smets@flevoland.nl.

1 Introduction

Despite large investments in (social) housing at the edge of cities, after the second World War, various countries experienced a period of significant suburbanization of households and companies. Suburbanization is associated with the sprawl of population, lack of open spaces on the outskirts of towns, fiscal and resource inefficiencies and traffic congestion (see Norton, 2006, for a discussion). In an attempt to stop the rampant suburbanization, or so-called 'sprawl', 'new towns' were developed (Burgess, 2008; Hall and Tewder-Jones, 2010). New town policy aimed to foster suburbanization in areas that lie at limited distance from the larger cities. This should reduce the shortage of housing and building plots in the larger cities, prevent resource inefficiencies (e.g., concentrated water and sewerage services, municipal police and fire protection) and, at the same time, provide good commuting possibilities from these areas to the larger cities.[1]

Consistent with the new towns objective to attract low and medium income households, houses were build and heavily subsidized by the (local) government (Southerton, 2002). For example in the Netherlands: "The policy focuses on supporting those who, for whatever reason, have a vulnerable position in the housing market. The reasons may vary. Besides income, or need for care or assistance, also social and cultural skills may play a role" (MinVROM, 2000). The policy was effective in the sense that low and medium priced houses in new towns attracted the targeted population (Van Roon et al., 2011; Mulder et al., 2008; CBS, 2010).

Nowadays, cities and municipalities are increasingly involved in internal competition because of two reasons (Porter, 2000). First, there is a gradual expansion of financial decentralization of social services. Cities with higher income groups and lower social allowances are relatively better off. Second, incentives are provided by 'naming and shaming' to make cities accountable in a decentralized setting. The best performing cities are named and put forward as best practice, the worst performing cities are publicly shamed. As a result, cities attempt to attract high status groups (so-called 'creative class'; Florida, 2004) by investing in housing, culture, education, quality of the environment and creating a more attractive labor market. However, given the historical characteristics and the vicious circle arising from naming and shaming, new towns may find it difficult to attract a higher potential population.

This paper focuses on an issue where both historical and local policy comes together: early school leaving. We define an early school leaver as a student younger than 23 who leaves education without a higher secondary diploma. At the macro level, previous literature indicated the importance of education in

[1] Despite referring to the same idea of a local society, we will use the terms 'region', cities and municipalities interchangeably in the paper.

creating economic growth (e.g., Aghion and Howitt, 1998, and reference therein). At the individual level, the literature observes a close link between poor labor market performance and low educational attainments. A higher secondary education diploma is considered as a minimal credential for a successful labor market entrance (Kaufman et al., 2004).

Students leaving school without a higher secondary degree risk to face serious problems. In terms of non-pecuniary outcomes, early school leaving is viewed as an indicator for future low socio-economic status (Sparkes, 1999), poor health (Groot and Maassen van den Brink, 2007), psychological problems, intergenerational poverty (Bowles, 1972) and juvenile delinquency (Dorn, 1996). Early school leavers have a higher probability to fulfill low-skilled jobs or to become unemployed (OECD, 2008). As the demerits are often passed on to the next generation, a downward moving spiral could emerge in cities and municipalities with significant school dropout (McLanahan, 1985).

This paper focuses on early school leaving in Dutch new towns. As cities and municipalities have a significant independence in policy making with respect to early school leaving, central educational and economic policy is characterized by decentralization and accountability.[2] With respect to the latter, the incentives arise from two angles. First, schools have a monetary incentive as they receive 2,500 euro per early school leaver who drops out less in comparison to base year 2005-2006 (see De Witte and Van Klaveren, 2011, for a discussion on this incentive).[3] Second, cities are incentivized by using a naming and shaming mechanism (i.e., so-called 'sunshine incentives'). The Ministry of Education publishes all dropout figures at a website (www.aanvalopschooluitval.nl) and writes to the city council its performance in comparison to other cities.

This paper discusses the validity of the latter incentive for new towns. Naming and shaming has been indicated as an effective incentive. For example, for human rights enforcement (Hanfer-Burton, 2008), in hospitals and surgeons (Mason and Street, 2005) or for policy monitoring (Pawson, 2002). Despite the merits of the incentive, we argue that the incentive can only be effective if populations (e.g., cities and hospitals) are compared to other comparable populations. Comparing two heterogeneous populations may lead to biased and unfair outcomes.

To make our point as clear as possible, we consider Almere and Lelystad, two completely newly built new towns. These new towns were founded in the new polder 'Flevoland' and lie at limited distance from Amsterdam and Utrecht. This paper examines whether and how regional accountability in terms of naming

[2]This has been restated in the 2011 'State of the Union' (Troonrede) by the Dutch Queen.

[3]Note that, for an individual school, an early school leaver induces an additional loss of 6,000 euro of enrollment fees paid by the government.

and shaming would be appropriate in similar new towns. Based on the raw figures on early school leaving, these two new towns should be shamed. The percentage of early school leaving in the Netherlands in 2008-2009 is 1.1% in general and pre-vocational education, while it is 2.1% for Almere and 2.3% for Lelystad. In vocational education, the difference is even larger: the percentage of early school leaving in the Netherlands is 7.8%, while it is 9.9% for Almere and 11.7% for Lelystad.[4] This paper tests if shaming is due to a (historical) migration pattern and thus due to underlying population characteristics, or due to other factors such as a different policy, and the performance and preparation of students in primary education. Hence, it examines whether the new towns are rightfully shamed. To examine this research question, we make use of rich comprehensive data which tracks the educational career of *all* Dutch students. The data also include background characteristics of the students, their parents and their living area.

From a methodological point of view, this paper contributes to the literature by adopting an innovative two-stage iterative matching procedure. Mahalanobis matching is used in the first stage to select comparable cities for each target city (i.e. Almere and Lelystad). In the second stage, an iterative matching procedure is used to examine if students from the target city would have been early school leavers would they have been living in the selected control cities. The iterative procedure constructs 500 random student samples from the target cities and compare them to the best comparable students of the selected control city. This procedure is adopted to control for sort order effects and to control for the effect that similar sized student populations may have on the estimated effect.

The remainder of the paper unfolds as follows. Section 2 describes the historical setting and explains how the cities of Lelystad and Almere attracted a selective population. Section 3 discusses the methodology, while Section 4 presents the results. Finally, we conclude in Section 5.

2 Differences between urban populations

2.1 New town policy

City populations can be characterized by the historical reasons for founding the city, by housing and labor market characteristics, and by the (quality of the) educational system in the city. The latter three elements are interrelated and play a crucial role in the decision to live or work in a region (Rossi, 1955; Smets, 2000). This section discusses the established new towns Almere and Lelystad and present some population characteristics.

[4]Due to data limitations this paper focuses on non-vocational tracks.

Almere and Lelystad are the only Dutch examples of completely newly built new towns founded to accommodate housing and business locations from other urban areas: the area of Amsterdam, and later also Utrecht. As the cities were erected on new land gained on the sea (i.e., the province of 'Flevoland'), housing, infrastructure and facilities had to be newly constructed. Since the province of 'Flevoland' was created, 32,000 businesses, 125,000 jobs and 15.000 dwellings have been realized. The population of Flevoland currently counts 400,000 persons, while it consisted of only water in 1940s (Province of Flevoland, 2011).

Although nowadays new town policy has been abandoned, these cities are still assigned to provide space for housing. This has recently been reconfirmed in national, provincial and municipal legislation (MinVrom, 1993, 2001, 2004; MinIM, 2011). The former new town policy offered relatively cheap houses to attract low and medium income households. The aim of the current policy, however, is to attract high ability citizens and (foreign and knowledge intensive) companies to create a more balanced and representative population (KOO, 2010). To achieve this aim, new towns invest in the availability of qualitative housing, high standard education, the presence of qualified personnel and a variety of culture (PBL, 2011; Weterings, 2011).

2.2 Low educational attainments

There are various signs for poor education quality in the new polder of Flevoland. School inspectorate (2010) considered the educational attainments in the province of Flevoland as lower, while the Ministry of Education observed a higher percentage of early school leavers in comparison to other provinces. The poor educational quality may be related to the set-up and origins of the province. First, the national spatial planning and housing policy caused selective migration from lower and middle income groups to the province of Flevoland (CBS, 2010). This resulted in Flevoland having a higher proportion of non-western immigrant and single parent families than other Dutch regions (as is illustrated in Figures 1 and 2). Previous literature indicated that both immigrants and single parents have a higher probability of early school leaving (Rumberger, 1983; Olsen and Farkas, 1989; Kalmijn and Kraaykamp, 2003; Plank, DeLuca and Estacion, 2005; Bridgeland, Dilulio, Morison, 2006; Dustmann and van Soest, 2007).

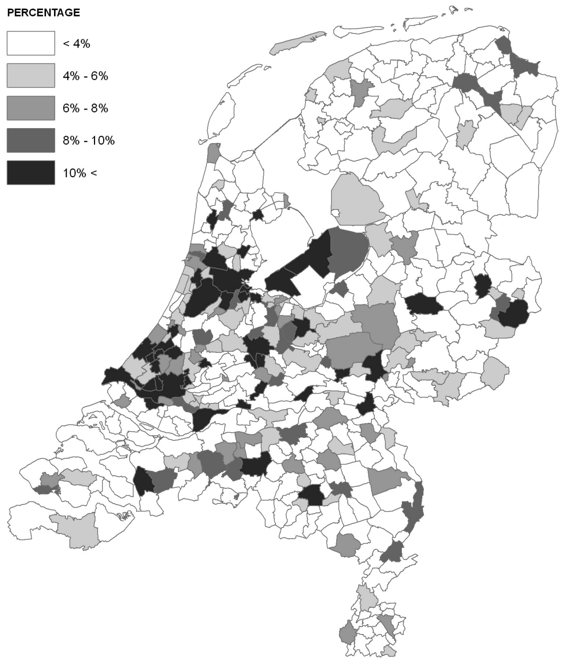

Figure 1: Proportion of non-western migrant households per municipality (%)

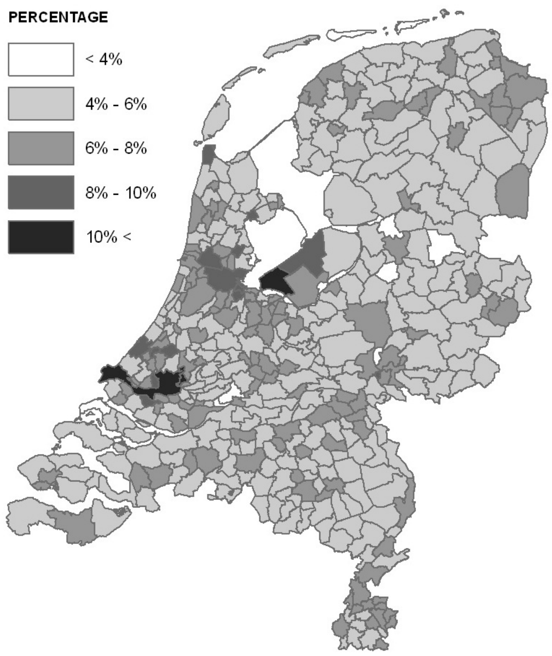

Figure 2: Proportion single-parent householdsper municipality (%)

Second, and in comparison to other provinces, there are only few higher educated parents in the new polder. Previous literature argued that the children of higher educated parents dropout of school less frequently (Ekstrom, Goertz, Pollack and Rock, 1986; Lamb and Rumberger, 1998; Teese and Walstab, 2002; Entwisle, Alexander and Steffel-Olson, 2005; Dalton, Gennie and Ingels, 2009) and have in turn positive peer effects on less advantages pupils (Rumberger, 1983; Herbert and Reiss, 1999; Cooper et al., 2005.).

Third, it has been argued that schools have insufficient financial resources and that teachers in Flevoland have too low expectations of pupils (Ledoux, 2011). Earlier literature argued that school resources and teacher attitude are crucial in preventing early school leaving (Finn, 1989; Adams and Becker, 1990; Herbert and Reis, 1999; Blue and Cook, 2004; Dalton, Gennie and Ingels, 2009). Insufficient resources arise because educational funding is based on the number of children in the years before. Given the fast expansion of Almere and Lelystad, this works as a financial burden. That the population of youngsters in Almere and Lelystad is rather large compared to the entire Dutch population is illustrated in Figure 3.

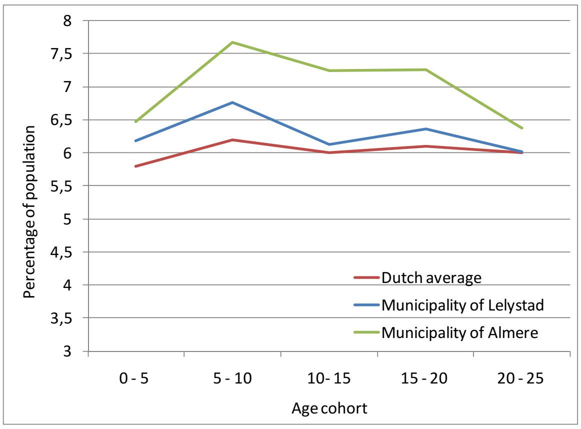

Figure 3: Percentage of citizens aged between 0 and 25.

2.3 The creative class

The arguments above indicate that cities have a strong incentive to attract households with a more favorable socio-economic background; households which are referred to as the creative class (Florida, 2004). One way to do so is to foster the expansion of facilities and to invest in the housing provision. For example, the larger cities have been restructured such that all income groups would be attracted (Smets, 1998, 2000). In the Dutch cities of Amsterdam, Haarlem, Maastricht and Utrecht, luxurious apartments have been built on restructured locations of suburbanized industries and hospitals. Also in Almere and Lelystad more luxurious up-market dwellings on bigger plots were constructed next to the social housing, but because this policy was already common practice in other cities, the relative position of these new towns did not change. It follows that once city differences are 'more or less' stabalized, it is rather difficult for cities to change their relative position to other cities with respect to schooling and labor market outcomes (i.e. early school leaving, unemployment, job search duration).

The incentive to attract the creative class is immediate in early school leaving policy. Municipalities (and the schools located within them) are considered to have an important task in the reduction of early school leaving, because they can create the necessary climate and focus to the issue. Despite large differences across cities, the central government aims to foster policy making based on legal and persuasive instruments. In early school leaving, a combination of financial and persuasive instruments have been developed (for an extensive description of Dutch early school leaving policy, see De Witte and Cabus, 2010). On the one hand, schools receive 2,500 euro per early school leaver less in comparison to base year 2005-2006. On the other hand, an extensive naming and shaming policy urges municipalities and schools to pay significant attention to early school leaving. This incentive can be labeled as 'fair' if all municipalities face similar difficulties in reducing early school leaving. However, it can be labeled as 'unfair', if cities are shamed purely on early school leaving outcomes while reducing early school leaving may be more difficult for them compared to other cities, due to underlying population characteristics. The latter may be the case for new towns.

3 Matching Strategy

3.1 Theory

The absolute and relative number of early school leavers in a city is by the Dutch Ministry of Education compared to any other city. Average dropout in city A (Almere or Lelystad) is therefore compared with average dropout in city R(eference).[5] Following our central argument, we argue that the mere comparison of dropout levels might be meaningless. Regional differences, historical policies and heterogeneous underlying populations might intricate the comparison.

One way to account for observed heterogeneity across cities is to estimate a probit model. A probit model, estimated at the individual student level (i), examines how the probability of dropping out (denoted by y_i) varies with regional characteristics ($\mathbf{r_i}$), student characteristics ($\mathbf{x_i}$) and the city where the student lives (A or R). The city indicator measures constant dropout differences between the two cities and can be

[5]For simplicity we assume that average dropout of A is compared to average drop out of one particular reference city R (although extension to multiple reference cities is straightforward).

interpreted as the dropout difference between the two cities while controlling for student and other regional characteristics.

As an advantage, the probit approach controls for compositional differences by conditioning on $\mathbf{x_i}$ and $\mathbf{r_i}$. In other words, it determines the average treatment effect $E(y_{Ai} - y_{Ri}|\mathbf{x_i}, {}_{\mathbf{i}})$. As a major disadvantage and crucial for the current analysis, the student population of R may consist of students who are non-comparable to any student in the student population of A. As a consequence, a probit analysis might deliver biased results. The analysis only measures how early school leaving varies between city A and R, which is fundamentally different from examining how living in city A instead of R causally influences dropout (an elaborate discussion is given in De Witte and Van Klaveren, 2011). Particularly the latter is an interesting measure in the setting at hand, as it will make the influence of new town policies clear.

To ensure that only comparable students are considered in the dropout comparison between city A and R, we employ an iterative matching strategy. Let I be an indicator variable that equals one if a student lives in A and zero otherwise. Given the dropout outcomes y_{Ai} and y_{Ri} for city A and R, respectively, we can write the average treatment effect as (see Cameron and Trivedi, 2005):

$$\begin{aligned} &E(y_{Ai}|I=1) - E(y_{Ri}|I=0) \\ &\qquad = E(y_{Ai} - y_{Ri}|I=1) + \{E(y_{Ri}|I=1) - E(y_{Ri}|I=0)\}. \end{aligned} \tag{1}$$

The first term on the second line represents the average treatment effect on the treated and the second term in brackets represents a 'bias'. Since we are interested in the average treatment effect on the treated it is required that $E(y_{Ri}|I=1) = E(y_{Ri}|I=0)$. This condition may not be met due to composition effects (i.e., student or region characteristics are different) and selection on (un)observables (i.e., students with particular characteristics are more likely to live in particular regions). We argued before that new towns suffer from both composition effects (e.g., more immigrant and low income households) and unobserved differences (e.g., policy differences). Therefore, we should condition on all characteristics that significantly explain the variation in dropout rates and that determine in what region students (or their parents) live. Under the assumption that $\mathbf{r_i}$ captures all relevant regional characteristics and $\mathbf{x_i}$ captures all relevant student characteristics, we have $y_{Ri} \perp I|\mathbf{x_i}, \mathbf{r_i}$ such that $E(y_{Ri}|\mathbf{x_i}, \mathbf{r}, I=1) = E(y_{Ri}|\mathbf{x_i}, \mathbf{r_i}, I=0)$. To $y_{Ri} \perp I|\mathbf{x_i}, \mathbf{r_i}$ is generally referred to as unconfoundedness (Imbens, 2005), or ignoribility (Rubin, 1978; Wooldridge, 2001). Under the assumption that ignorability is satisfied, Angrist and Krueger (1999) show that the average treatment effect on the treated conditional on $\mathbf{x_i}$ and $\mathbf{r_i}$ is given by:

$$E(y_{Ai} - y_{Ri}|I = 1) = E(\Delta_{\mathbf{x_i},\mathbf{r_i}}|I = 1) = E(y_{Ai}|\mathbf{x_i}, \mathbf{r_i}, I = 1) - E(y_{Ri}|\mathbf{x_i}, \mathbf{r_i}, I = 0). \quad (2)$$

The ignorability assumption, however, does not ensure that unobserved factors do not partly determine I and y; the so-called selection on unobservables. There is, for example, evidence that parental schooling is causally related to childrens' schooling (see Holmlund, Lindahl, and Plug, 2008), but the registered data used in this study contains no information on parental schooling. Even though we partly control for parental education level by including education type and ethnicity as conditioning variables in $\mathbf{x_i}$, and by including household income as conditioning variable in $\mathbf{r_i}$, we can only demonstrate that cities A and R are equivalent on observed characteristics related to parental education level and must assume that this equivalence suffices to ensure that both cities are also equivalent on the unobservable parental education level.

Based on their published dropout figures, the Dutch Ministry of Education considers both new towns Almere and Lelystad as poor performing cities with respect to early school leaving (i.e., $E(y_{Ai} - y_{Ri}|I = 1) > 0$). Given the average treatment effect, it is possible to determine if the selection on unobservables should be positive or negative on the basis of this expectation, and whether this is plausible. If the observation of the Ministry is correct and we would find that dropout in A is similar to that of city R (i.e., $E(y_{Ai} - y_{Ri}|I = 1) = 0$) then it must be that our estimate is an underestimation (i.e. $E(y_{Ri}|I = 1) - E(y_{Ri}|I = 0) < 0$). Intuitively, this means that dropout of students in R is expected to be lower if they would have lived in city A due to selection on unobservables. The latter is informative because it shows that the expectation of the Ministry can only be true if students, more likely to drop out of school, are more likely to live in city R. Based on historical information on mobility of persons to cities we can reason if this type of selection is plausible.

3.2 Matching Procedure

3.2.1 Mahalanobis matching

The description of the matching procedure relies on Cameron and Trivedi (2005). For notational convenience, let $\mathbf{z_i}$ be a combined vector of student ($\mathbf{x_i}$) and regional ($\mathbf{r_i}$) characteristics. Denote the comparison group for student i in city A with characteristics $\mathbf{z_i}$ as the set $A_j(\mathbf{z}) = \{j|\mathbf{z_j} \in c(\mathbf{z_i})\}$, where $c(\mathbf{z_i})$ represent the characteristics neighborhood of $\mathbf{z_i}$. Furthermore, N_A and N_R denote the number of students in, respectively, city A and R. The weight given to the j^{th} observation, that could serve as a potential match for the i^{th}

treated observation, is denoted by $w(i,j)$ with $\sum_j w(i,j) = 1$. The matching estimator of the average treatment effect on the treated is:

$$\Delta = \frac{1}{N_A} \sum_{i \in \{I=1\}} [y_{1,i} - \sum_j w(i,j) \cdot y_{0,j}], \quad (3)$$

where $0 < w(i,j) \leq 1$, and $I = 1$ is the set of students who are living in city A and j is an element of the set of matched students in the reference city R. By choosing different weights, different matching estimators can be generated. The weights can be obtained by using an exact matching estimator, a kernel estimator or an estimator that is based on some distance measure. The former weights are not preferred in the setting at hand as the probability to find an exact match depends on the number of matching variables. In our case this would induce a bias, because it is less likely that a match will occur for atypical households and, consequently, the matching estimate will show a regression towards the mean.

This study weights students by a nearest neighbor approach using mahalanobis distances. Each student in A is therefore matched to the best look-alike student in R, based on the vector of observable characteristics, $\mathbf{z}_i$. Mahalanobis matching minimizes the distance between observed characteristics of students:

$$w(i,j) = 1 \text{ if } j = \arg \min_{j=1,\ldots,N^R} (\mathbf{z_i} - \mathbf{z_j})' \Sigma^{-1} (\mathbf{z_i} - \mathbf{z_j}), \quad (4)$$

where Σ^{-1} represents the within sample covariance matrix and where $w(i,j) = 1$ if a match is possible. A major advantage of using mahalanobis distances is that it is fully non-parametric so that the outcome of the match does not rely on any functional form or distribution. This is convenient as there is no *a priori* information on the relationship between observable characteristics and early school leaving (Yatchew, 1998). Assuming a functional form could therefore induce a specification bias.

We emphasize that kernel estimators or matching estimators based on a propensity score, i.e. the conditional probability of being a student in R, are not necessarily inferior to Mahalanobis matching. Each matching method has its own advantages and disadvantages (for an elaborate description, see Cameron and Trivedi, 2005). Different matching estimators are applied to test the robustness of the results, and the matching estimators were comparable to the Mahalanobis matching estimators.[6]

[6] We matched students from A to one, five and ten students from R using the propensity score, and we matched students on the basis of caliper and kernel matching. When we match on the propensity score we match on the conditional probability, $p(\mathbf{z})$, that a student lives in A given $\mathbf{z}$. The matching set is then $A_i(p(\mathbf{z})) = \{p_j \min_j \|p_i - p_j\|\}$. Caliper matching is essentially a propensity score matching estimator where we impose that $p_i - p_j < \varepsilon$. For ε we take the values 0.05 and 0.01. When we performed Kernel matching we used an Epanechnikov kernel function with 0.6 as bandwidth and the weight that defines the Kernel matching estimator is then $w_{i,j} = \frac{K(\mathbf{z_j} - \mathbf{z_i})}{\sum_{j=1}^{N_{C,i}} K(\mathbf{z_j} - \mathbf{z_i})}$. The outcomes of the alternative matching models are available upon

3.2.2 Iterative matching

If the student populations of R and A are equal in student size, then the quality of the match worsens if we do not allow students in R to be matched multiple times to students in A. This is because as the matching procedure continues, there are less students in R to choose from and, evidently, best look-alike students from R are matched first. Intuitively, the solution to this problem is to match students from R with replacement, since this ensures that best look-alike students in R can be matched multiple times. However, if students in R can be matched more than once to students in A, a small student group in R may drive the estimated effect. An additional problem is that the student ordering in the data determines how students in R are matched to students in A. For example, students with common characteristics in R can be matched to many students in A. Under matching with replacement, the data ordering ensures that for every match the same student from the reference city is picked as a match and, consequently, this one student is overrepresented in the analysis.

To account for the above mentioned problems, we simulate the distribution of the matching estimator (the so-called data generating process) by a bootstrap like iteration. The procedure runs as follows. Step one selects 500 students from A at random. Step two randomizes students from R (based on a variable that assigns a pseudo random number to each student drawn from a uniform distribution). Step three determines the average treatment effect on the treated using equations (3) and (4). Steps 1 to 3 are repeated 500 times such that the distribution of the treatment effect on the treated is simulated. The mean of this distribution corresponds to the estimated treatment effect, while its standard deviation indicates the reliability of the estimate.[7]

From previous discussion it became clear that the selection of the reference city R is crucial. To select an appropriate reference city, one should not only focus on characteristics of the underlying student population but also on city characteristics, because cities with different characteristics have different dynamics. Based on urban and public economics literature (e.g., Ammons, 2001, and references therein) and discussions with local policy makers, relevant regional characteristics are selected that represent the vector $\mathbf{r_i}$. Based on this vector, the distance between the target city and all other Dutch cities (i.e. $d(i,j) = (\mathbf{r_i} - \mathbf{r_j})'\Sigma^{-1}(\mathbf{r_i} - \mathbf{r_j})$) is computed. The cities with the smallest distances are considered as reference cities.

request.

[7]Note that the distribution of the matching estimator is not necessarily normal.

3.2.3 Data and matching criteria

We use 2008 data on all 417 Dutch municipalities from Statistics Netherlands. From these observations, the 6 best comparable reference cities for each target city (i.e., Almere and Lelystad) are selected by the non-iterative nearest neighbor approach using mahalanobis distances in equations (3) and (4).[8]

Vector $\mathbf{r_i}$ consists of four elements.[9] The first characteristic is the population growth per 1,000 inhabitants. Population growth has been correlated with declining service quality of local government (Ladd, 1994), as well as with higher performance of the municipality (Afonso, 2008). We do not attempt to reveal the direction of the influence of population growth, but only use this variable as a proxy for the dynamics in the municipalities. A priori, it can be expected that municipalities with higher population growth are more dynamic than municipalities with steady or declining population growth. The second region characteristic is the number of inhabitants. Previous literature observed both economies of scale (Afonso, 2008) and diseconomies of scale (Loikkanen and Susiluoto, 2005). By comparing municipalities similar in size, the scale issue is avoided in the paper at hand. The third characteristic is a proxy for wealth of the population. We use the population's average disposable income per household. In higher income areas, demand for local public services is higher as well are tax revenues (De Borger et al., 1994). In turn, the latter can foster the educational facilities. In a fair comparison, only municipalities with a similar average income should be compared. Moreover, and as mentioned above, as parental schooling is causally related to childrens' schooling (Holmlund, Lindahl, and Plug, 2008), cities' average disposable income may partly capture the effect. The fourth and final characteristic consists of the number of local jobs as a proportion of the number of inhabitants. It serves as a proxy for labor dynamics (Ammons, 2001). Municipalities with a high number of local jobs, might be different from municipalities with a low number of local jobs (e.g., the so-called dormitory towns).

Once the reference cities are selected (i.e., 6 cities for Almere and 6 cities for Lelystad), the iterative matching procedure is applied to mutually compare school dropout. Individual student data arise from an unique comprehensive administrative data set which follows all Dutch students in secondary education (so-called Basisregistratie Onderwijsnummer; BRON). The data are used by the Ministry of Education to determine the number of early school leavers. We consider students enrolled in the academic year 2008-2009. Students are labeled as early school leaver if they left education without a higher secondary degree during the school year 2008-2009 or during the three proceeding academic years.[10] Since city characteristics, $\mathbf{r_i}$, are

[8] Six reference cities are selected. A discussion on more cities would reduce the focus of the paper and is beyond its scope. A discussion on less cities would reduce its insights.

[9] A robustness analysis with alternative and additional characteristics delivered similar outcomes.

[10] The latter is to account for the fact that a municipality is still responsible for dropout students, even if they left education

included in the selection of R, the iterative matching procedure matches only on student characteristics, $\mathbf{x_i}$. These student characteristics are characteristics at the student level and at the school level. The characteristics at the student level consist of gender (girls are the reference group), ethnicity (being non-Dutch), type of educational track (i.e., first year, pre-vocational, general and pre-university education), indication if the child lives in a single-parent family, a dummy variable for students coming from disadvantageous areas (as defined by Statistics Netherlands on a wide range of indicators) or in need of additional learning support (i.e., students with low intellectual capacities). The student characteristics at the school level are the proportion of children living in single-parent families and the proportion of non-Dutch children at the school.

4 Empirical Results

4.1 Matching at city level: Selection of reference cities

Table 1 shows for the evaluated city A the six selected control cities (left panel represents Lelystad and right panel represents Almere). From an urban and historical perspective, the similarities among the cities are clear. All cities have similar (historical) backgrounds. The majority of cities were official new towns or had a major role as an overflow area for a nearby larger city (i.e., Almere, Amersfoort, Heerhugowaard, Hoorn, Lelystad were overflow area for Amsterdam; Helmond for Eindhoven; Breda and Schiedam for Rotterdam; Almere and Amersfoort for Utrecht; and Zoetermeer for The Hague). Figure 4 illustrates that the geographical location of reference cities R is within a short distance of one of the larger 'job providing' cities Amsterdam, Rotterdam, Utrecht and The Hague (the so-called 'Randstad', which is the main economic area in the Netherlands).

Table 1: **Summary statistics municipalities**

City	Population Growth	Inhabitants	Household Income (x1000)	Jobs per inhabitant	City	Population Growth	Inhabitants	Household Income (x1000)	Jobs per inhabitant
Lelystad (Target)	10.7	73,455	32.0	0.445	Almere (Target)	13.5	184,508	33.9	0.389
Heerhugowaard	9.8	50,636	35.1	0.425	Haarlem	3.7	147,915	32.3	0.462
Helmond	11.4	87,262	31.4	0.438	Breda	5.6	171,438	34.1	0.581
Hoorn	9.6	69,027	32.8	0.467	Tilburg	6.8	202,777	30.9	0.600
Kampen	9.6	49,622	32.5	0.367	Enschede	8.5	155,412	28.5	0.483
Schiedam	5.1	75,136	30.0	0.487	Zoetermeer	11.5	120,192	35.4	0.416
Wageningen	13.3	36,455	32.3	0.438	Amersfoort	14.2	142,211	35.5	0.571
National average	2.9	38758	35.3	0.38	National average	2.9	38758	35.3	0.38

Data for 2008; source Statistics Netherlands.

during previous academic years. In this sense, this approaches to the definition of Eurostat which defines the percentage of early school leavers as all students without diploma relative to all students younger than 23. Due to data limitations, we only consider the last three academic years.

On a more detailed level, similarities between cities can be observed. Schiedam was a suburban district for Rotterdam dockworkers who came to these new towns because it was nearby their work and the housing facilities were relatively cheap. Haarlem functioned as residential area of Amsterdam, and Kampen served as residential area of Zwolle. Where Haarlem, Breda and Amersfoort attracted, on average, high skilled workers (i.e. the creative class), Almere, Heerhugowaard, Helmond, Hoorn, Lelystad and Schiedam attracted average and low skilled workers of their donor cities. Haarlem had a relatively wealthy population in the past, but nowadays their population has an average disposable income due to a higher percentage of pensioners. The other control cities cannot be referred to as new towns with historical inner cities, but these cities attracted a similar population during the industrial revolution. Enschede, Helmond, Schiedam and Tilburg attracted former farm workers who came to the historical city during the industrial revolution to work in textile or food industries. Those cities provided mainly low skilled labor. Nowadays, the city of Tilburg, Wageningen and Enschede have a university, which explains the peak of 18 years olds who live in the city.

Figure 4: Reference cities for municipality of Lelystad (left figure) and Almere (right figure)

Table 1 shows that the target and reference cities deviate in a similar way from the national average: the population growth and the number of inhabitants is higher, the disposable income per household is (on average) lower and the number of jobs as a proportion of the number of inhabitants is higher. The differences in Table 1 suggest that it does not make sense to compare regional dropout with the national average dropout if underlying regional characteristics, that may also influence dropout, are very different.

Upper and lower bound estimates

Even though the six 'best look-alike' cities for each target city are selected (given the vector $\mathbf{r_i}$), we still observe substantial heterogeneity between the target cities' characteristics and the characteristics of the reference cities. The differences are natural and a result of the mahalanobis distance minimization: cities that are very similar on one dimension of $\mathbf{r_i}$, might be different on another dimension of $\mathbf{r_i}$. Nevertheless, some of the heterogeneity might influence early school leaving differences.

For Lelystad, based on the characteristics shown in Table 1, Helmond appears to be the best comparable reference city. Schiedam has lower population growth, which is associated with less early school leaving, but also has a lower disposable income which is associated with higher early school leaving. Because the difference in population growth is more pronounced than the difference in disposable income, and because we control for the students education type and ethnic background in the second stage matching procedure that will partly capture the effect of disposable income, we expect that estimated early school leaving differences between Lelystad and Schiedam are upper bound estimates.

We shortly elaborate the meaning of upper and lower bound estimates, as they play a crucial role in the interpretation of the results. The matching estimator predicts early school leaving differences between the target and control cities. A positive value suggests that the target city has more early school leaving than the reference city, while a negative value suggests that city A has less early school leaving than city R. If we compare early school leaving between Schiedam and Lelystad, the matching estimator may be biased as we did not accurately control for population growth differences. However, since lower population growth is associated with lower early school leaving in Schiedam, we know that the matching estimator is upward biased, in the sense that it predicts early school leaving differences that are too positive. Therefore, we should take into account that the obtained estimate is an upper bound estimate: predicted early school leaving differences are correct, probably lower, but not higher. In a similar fashion, we can reason that an early school leaving comparison between Heerhugowaard and Lelystad results in an upper bound estimate, because Heerhugowaard has a lower population growth and higher disposable income. An early school leaving comparison between Wageningen and Lelystad would result in an lower bound estimate, because Wageningen has a higher population growth and lower disposable income.

Focusing on disposable income and population growth, Table 1 suggests that the best comparable cities for Almere are Zoetermeer and Amersfoort. Haarlem and Breda have lower population growth and comparable disposable income such that early school leaving comparison between the latter two cities and Almere would result in an upper bound estimate. Also Tilburg and Enschede have lower population growth, but the disposable income in these cities is lower than Almere. As we control in the iterative matching procedure at the individual level for ethnic background and education type, the effect of a diverging disposable income on dropout will be captured. Therefore, we can argue that an early school leaving comparison between these control cities and Almere results in upper bound estimates because the effect of population growth differences is likely to be more pronounced than the effect of differences in disposable income.

4.2 Matching at student level: comparing similar students from similar municipalities

Interpretation

In Section 4.1 reference cities are selected to control for regional differences. However, this does not ensure that the target cities' student population is comparable to the student populations of their selected control cities. An iterative matching at the individual level can account for this. Table 2 and Table 4 present how the iterative matching controls for underlying population differences along two lines. First by comparing the target cities' student population with the observed student populations of the reference cities (i.e., the summary statistics shown in row labeled *Population*). Second by comparing the average characteristics of the (iteratively and) randomly chosen students from the target cities with the matched control students from the control cities (i.e., the summary statistics shown in the row labeled *Simulated*).

Let us first focus on the city Almere, and in particular on the summary statistics for Almere presented in Columns 3 and 4 of Table 2, which report for each characteristic the population mean and the simulated mean. The simulated mean represents the average value of the 500 means generated in the iterative matching process. Consider, for example, the simulated mean value of 0.487 for the characteristic *Girl*. In each iteration the average proportion of girls is simulated for 500 students who are randomly drawn from the Almere population. Since we perform 500 iterations, the average proportion of girls is simulated 500 times and, thus, the simulated mean in the table shows the average value of these 500 simulated means. By definition, the standard deviations of the simulated means, reported in Column 4, are smaller than those of the population means. Obviously, for the target city, the simulated and population means are identical as we randomly draw 250,000 students from the target population (i.e., 500 iterations times 500 students) and, by the law of large numbers, these simulated means converge to the population means.

Empirical outcomes for Almere

Comparison of student characteristics

When comparing the student populations of Almere to those of the reference cities, Table 2 shows that Almere has relatively more students who are non-Dutch and who are living in ac single-parent family. Moreover, there are relatively more students coming from a disadvantageous area (as defined by Statistics Netherlands on a wide range of indicators). In previous literature, the latter three differences have been indicated as unfavorable to early school leaving (i.e., more school dropout). It can therefore be expected that students who live in Almere are more likely to leave school early than students who live in the reference cities.

As a result of new town policy, the city of Almere has a younger population, and consequently, significantly more first year students than the control cities (the only exception is the university city of Tilburg). After the first year of secondary education, students in the Netherlands are assigned by a tracking system to a particular educational level. Almere has relatively less students in general and pre-university education, but more students in lower-vocational training. The latter are less requiring educational tracks. In comparison to some reference cities, Almere has less students in a pre-vocational track. However, relative to the same cities, it also has relatively less students in higher educational tracks and more students in lower educational tracks. This indicates that observing *less* students in a pre-vocational education track goes along with *more* students in an even lower educational track.

The simulated means and standard deviations for each control city are presented in the rows labeled as *Simulated*. Recall that in comparing early school leaving between the simulated samples of Almere and the control cities, we control for both regional differences and differences between the student populations. Therefore by construction, the means are not significantly different from the simulated (and population) means of Almere as the matching procedure directly accounts for student population differences between Almere and the control city.

Comparison of early school leaving

With respect to early school leaving, the population (i.e., observed) proportion of student dropout in Almere is higher than in the control cities. However, the simulated (i.e., by matching) proportions for the control cities tend to be higher than their population proportions and are more equivalent to the early school leaving proportion in Almere. This means that early school leaving differences between Almere and the control cities become smaller when we take into account student population differences.

Table 2: Comparing Almere students to control city students

		Almere		Amersfoort		Breda		Enschede		Haarlem		Tilburg		Zoetermeer	
		Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Girl	Simulated	0.487	0.021	0.491	0.021	0.493	0.022	0.487	0.023	0.486	0.022	0.491	0.022	0.496	0.022
	Population	0.486	0.500	0.493	0.500	0.484	0.500	0.496	0.500	0.515	0.500	0.480	0.500	0.498	0.500
Non-Dutch	Simulated	0.406	0.022	0.406	0.022	0.404	0.023	0.402	0.021	0.407	0.021	0.404	0.023	0.406	0.022
	Population	0.405	0.491	0.153	0.360	0.183	0.387	0.310	0.462	0.245	0.430	0.241	0.427	0.296	0.457
Single-parent family	Simulated	0.056	0.010	0.056	0.010	0.055	0.010	0.056	0.010	0.056	0.010	0.056	0.010	0.056	0.010
	Population	0.056	0.230	0.013	0.112	0.021	0.142	0.033	0.177	0.024	0.152	0.040	0.196	0.038	0.191
Education level:															
First year	Simulated	0.154	0.016	0.154	0.016	0.155	0.015	0.154	0.016	0.153	0.016	0.040	0.009	0.154	0.016
	Population	0.154	0.361	0.085	0.280	0.041	0.199	0.065	0.247	0.072	0.259	0.152	0.359	0.117	0.322
Lower pre-vocational (LWOO)	Simulated	0.146	0.014	0.146	0.014	0.115	0.014	0.147	0.015	0.145	0.015	0.146	0.015	0.147	0.014
	Population	0.147	0.354	0.091	0.288	0.122	0.328	0.151	0.358	0.118	0.323	0.208	0.406	0.087	0.282
Pre-vocational (VMBO)	Simulated	0.265	0.019	0.313	0.021	0.253	0.025	0.272	0.029	0.305	0.028	0.721	0.020	0.314	0.021
	Population	0.265	0.441	0.345	0.475	0.215	0.411	0.317	0.465	0.221	0.415	0.309	0.462	0.341	0.474
General training (HAVO)	Simulated	0.179	0.018	0.180	0.018	0.174	0.016	0.182	0.024	0.178	0.017	0.021	0.007	0.178	0.016
	Population	0.177	0.382	0.231	0.422	0.253	0.435	0.228	0.419	0.270	0.444	0.162	0.368	0.204	0.403
Pre-university training (VWO)	*Reference*														
Disadvantageous area	Simulated	0.980	0.006	0.978	0.006	0.512	0.028	0.980	0.006	0.979	0.006	0.980	0.006	0.981	0.006
	Population	0.980	0.138	0.335	0.472	0.382	0.486	0.723	0.447	0.433	0.496	0.481	0.500	0.821	0.384
Proportion early school leaving	Simulated	0.021	0.006	0.022	0.031	0.018	0.021	0.016	0.026	0.024	0.026	0.042	0.076	0.016	0.029
	Population	0.021	0.006	0.013	0.113	0.013	0.114	0.015	0.123	0.019	0.137	0.023	0.150	0.014	0.118
Number of Observations	Simulated	500x500		500x500		500x500		500x500		500x500		500x500		500x500	
	Population	9780		14742		9229		6214		9878		7683		6630	

Table 3: School leaving comparison Almere and reference cities.

		Average treatment effect on the treated						Average treatment effect on the untreated					
	UB/LB	Almere	Amersfoort	Breda	Enschede	Haarlem	Tilburg	Almere	Amersfoort	Breda	Enschede	Haarlem	Tilburg
Almere		.	.	.	.	.	.	.	.	.	.	.	.
		.	.	.	.	.	.	.	.	.	.	.	.
Amersfoort		-0.001	.	.	.	.	.	0.008	.	.	.	.	.
		(0.033)	.	.	.	.	.	(0.006)	.	.	.	.	.
Breda	UB	0.003	-0.004	.	.	.	.	0.007	0.000	.	.	.	.
		(0.022)	(0.021)	.	.	.	.	(0.006)	(0.005)	.	.	.	.
Enschede	UB	0.005	0.002	0.001	.	.	.	0.006	-0.003	-0.002	.	.	.
		(0.027)	(0.026)	(0.034)	.	.	.	(0.006)	(0.005)	(0.005)	.	.	.
Haarlem	UB	-0.003	-0.006	-0.002	-0.010	.	.	0.002	-0.006	-0.006	-0.004	.	.
		(0.033)	(0.018)	(0.021)	(0.024)	.	.	(0.006)	(0.005)	(0.005)	(0.006)	.	.
Tilburg	UB	-0.021	-0.004	-0.004	-0.018	-0.002	.	-0.002	-0.010**	-0.010**	-0.008	-0.004	.
		(0.052)	(0.021)	(0.021)	(0.040)	(0.022)	.	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	.
Zoetermeer		0.005	0.004	-0.001	0.002	0.007	0.009	0.007	-0.001	-0.001	0.001	0.005	0.009
		(0.016)	(0.023)	(0.021)	(0.019)	(0.021)	(0.020)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)

Note I: bootstrapped standard errors in parenthesis

Note II: negative means represent that early school leaving in Almere is higher than in the control city.

Note III: */**/*** statistically significant at the 10/5/1 percent level.

Table 3 examines these differences in more detail. The right panel shows differences in early school leaving when controlling for regional differences, but not for student population differences (i.e., the average treatment effect on the untreated). The analysis is performed for each combination of cities. The reported differences represent the proportion of early school leaving for the row city subtracted from the proportion of early school leaving for the column city. Consider, for example, the difference of 0.008 reported in the first column of the right panel. This difference shows that subtracting the early school leaving proportion of Amersfoort from that of Almere results in a positive early school leaving difference of 0.008, meaning that the proportion of early school leaving in Almere is 0.8 percentage points higher than in Amersfoort. The results are presented for all city combinations for two reasons. First, for completeness. Second, to check if differences between the target city and the control cities are different from differences between the control cities. This is is not the case, which points to robust results. To focus the story, we discuss only early school leaving differences between the target and the control cities (i.e., the first column of the right hand panel).

The right panel shows (except for Tilburg) positive but insignificant differences in school dropout. It can be argued, however, that the statistical significance of the results is less important as the reported differences are based on population means. The upper (UB) and lower (LB) bounds, derived in Section 4.1, are presented in the second column. For four of the six cities the table indicates UB estimates, meaning that it is likely that the true differences are lower than the estimated small positive differences.

The left panel presents early school leaving differences when controlling for both regional and student population differences (i.e., the average treatment effect on the treated). Even though these differences are not significant, they tend to be lower than the predicted differences in the right panel. Controlling for student population differences thus reduces early school leaving differences. For three control cities, we even find negative differences, which means that school dropout in Almere is lower than in the control cities. For three other control cities, we observe a positive difference of about 0.5 percentage points. These differences are very small, especially when we recognize that these estimates are upper bounds.

As argued before, naming and shaming is often assumed to be an effective incentive to increase the performance and accountability. However, it can also be misleading if underlying characteristics differ. The discussion above clearly illustrates the latter. Almere should be 'shamed' as it has a higher proportion of students leaving school, but the above-mentioned empirical results indicate that this new town performs equally well as comparable cities with comparable student populations.[11]

[11]This is obviously not to say that a high proportion of early school leaving is not problematic, it only says that it would be unfair to characterize Almere as a less performing city.

Table 4: Comparing Lelystad students control city students

		Lelystad		Heerhugowaarrd		Helmond		Hoorn		Kampen		Schiedam		Wageningen	
		Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Girl	Simulated	0.503	0.021	0.530	0.024	0.508	0.021	0.511	0.019	0.502	0.021	0.424	0.019	0.510	0.030
	Population	0.502	0.500	0.483	0.500	0.508	0.500	0.470	0.499	0.503	0.500	0.482	0.500	0.517	0.500
Non-Dutch	Simulated	0.379	0.463	0.318	0.027	0.384	0.019	0.380	0.019	0.380	0.019	0.383	0.019	0.359	0.061
	Population	0.379	0.485	0.157	0.364	0.218	0.413	0.176	0.381	0.090	0.286	0.209	0.406	0.204	0.403
Single-parent family	Simulated	0.052	0.199	0.052	0.009	0.052	0.009	0.052	0.008	0.052	0.009	0.052	0.009	0.052	0.009
	Population	0.052	0.223	0.012	0.108	0.026	0.158	0.022	0.146	0.010	0.101	0.023	0.149	0.025	0.156
Education level:															
First year	Simulated	0.267	0.018	0.266	0.023	0.265	0.017	0.249	0.018	0.267	0.019	0.266	0.018	0.271	0.034
	Population	0.267	0.442	0.082	0.274	0.043	0.203	0.063	0.243	0.094	0.292	0.017	0.131	0.165	0.371
Lower pre-vocational (LWOO)	Simulated	0.152	0.014	0.139	0.014	0.089	0.012	0.152	0.015	0.150	0.014	0.000	0.000	0.152	0.024
	Population	0.151	0.358	0.089	0.284	0.088	0.283	0.130	0.337	0.093	0.291	0.071	0.257	0.149	0.356
Pre-vocational (VMBO)	Simulated	0.299	0.015	0.302	0.021	0.299	0.019	0.416	0.021	0.300	0.019	0.000	0.000	0.296	0.031
	Population	0.299	0.458	0.306	0.461	0.366	0.482	0.286	0.452	0.348	0.476	0.249	0.432	0.243	0.429
General training (HAVO)	Simulated	0.148	0.015	0.155	0.017	0.150	0.014	0.091	0.011	0.148	0.014	0.373	0.094	0.148	0.014
	Population	0.148	0.356	0.280	0.449	0.240	0.427	0.263	0.440	0.226	0.418	0.273	0.446	0.098	0.298
Pre-university training (VWO)	*Reference*														
Disadvantageous area	Simulated	0.842	0.015	0.784	0.029	0.847	0.014	0.838	0.016	0.832	0.015	0.842	0.016	0.841	0.015
	Population	0.842	0.365	0.325	0.469	0.548	0.498	0.408	0.491	0.184	0.387	0.351	0.477	0.138	0.345
Proportion early school leaving	Simulated	0.028	0.007	0.012	0.015	0.007	0.012	0.009	0.009	0.018	0.014	0.008	0.011	0.020	0.019
	Population	0.028	0.164	0.015	0.120	0.014	0.118	0.015	0.123	0.010	0.101	0.008	0.092	0.016	0.125
Number of Observations	Simulated	500x500		500x500		500x500		500x500		500x500		500x500		500x500	
	Population	2930		2878		4814		8961		9205		5303		1889	

Empirical outcomes for Lelystad

Table 4 presents summary statistics for Lelystad. The discussion of the results is similar as for Almere. Comparing the student population of Lelystad with the reference cities, we observe that students from Lelystad are more frequently non-Dutch, come from disadvantageous areas and are more often living in single-parent families. The educational population differences between Lelystad and the control cities is similar to the discussion before. To avoid repetitive explanations, we do not explain these differences in further detail here.

From Table 4, we observe differences in early school leaving between Lelystad and its reference cities. Accounting for regional heterogeneity does not eliminate differences in school dropout. Even when focusing on the simulated means where besides regional characteristics also student population differences are taken into account, one still notices differences in early school leaving. In fact, the simulated results do predict a larger difference in school dropout.

Table 5 examines these results in more detail. From the average treatment effect on the untreated (right panel) we observe significant differences in early school leaving between Lelystad and its reference cities. This is not the case among the references cities. To test whether this is caused by student population differences, we look at the average treatment effect on the treated (left panel). The results indicate that differences in early school leaving increase, although the significance mostly disappears. Nevertheless, differences between Lelystad and, respectively, Hoorn and Helmond remain marginally significant, even if we control for regional and student population differences.

Table 5 suggests that differences in early school leaving between Lelystad and its reference cities are not only caused by regional and student differences, also other factors play a role. Natural suspects are differences in policy, in focus to the issue, in the performance and preparation of students in primary education, or the awareness of schools and teachers on early school leaving.

Obviously, despite this suggestive conclusion, this paper does not evaluate whether Lelystad or Almere perform well causally, in the sense that we do not test if the policy of the target cities are effectively reducing early school leaving. But for the new town Lelystad, we do argue, in contrast to what we argue for the new town Almere, that differences in early school leaving between Lelystad and its control cities are not solely the consequence of regional and student population differences. New towns may have an unfavorable population, but this cannot always explain bad performance entirely.

Table 5: School leaving comparison Lelystad and Control Cities.

		Average treatment effect on the treated						Average treatment effect on the untreated					
	UB/LB	Lelystad	Heerhugowaard	Helmond	Hoorn	Kampen	Schiedam	Lelystad	Heerhugowaard	Helmond	Hoorn	Kampen	Schiedam
Lelystad		.	.	.	.	.	.	.	.	.	.	.	.
		.	.	.	.	.	.	.	.	.	.	.	.
Heerhugowaard	UB	0.015	.	.	.	.	.	0.013*	.	.	.	.	.
		(0.019)	.	.	.	.	.	(0.007)	.	.	.	.	.
Helmond		0.021*	0.001	.	.	.	.	0.014**	0.000	.	.	.	.
		(0.012)	(0.021)	.	.	.	.	(0.007)	(0.005)	.	.	.	.
Hoorn		0.019*	0.004	0.005	.	.	.	0.012*	-0.001	-0.001	.	.	.
		(0.011)	(0.022)	(0.021)	.	.	.	(0.006)	(0.005)	(0.005)	.	.	.
Kampen		0.009	-0.001	-0.012	0.003	.	.	0.017**	0.004	0.004	0.005	.	.
		(0.016)	(0.034)	(0.036)	(0.019)	.	.	(0.007)	(0.005)	(0.005)	(0.005)	.	.
Schiedam	UB	0.019	0.006	0.001	0.002	0.001	.	0.019***	0.006	0.006	0.006	0.002	.
		(0.013)	(0.024)	(0.028)	(0.023)	(0.023)	.	(0.007)	(0.005)	(0.005)	(0.005)	(0.004)	.
Wageningen	LB	0.008	-0.004	-0.006	-0.005	-0.008	0.002	0.012*	-0.002	-0.002	-0.001	-0.006	-0.007
		(0.021)	(0.030)	(0.028)	(0.024)	(0.027)	(0.023)	(0.007)	(0.005)	(0.005)	(0.006)	(0.004)	(0.004)

Note I: bootstrapped standard errors in parenthesis

Note II: negative means represent that early school leaving in Lelystad is higher than in the control city.

Note III: */**/*** statistically significant at the 10/5/1 percent level.

5 Conclusion

Regional differences arising from historical policies hardly fade out. This paper focused on two Dutch completely new towns: Almere and Lelystad. In these new towns, relatively more students are leaving education without a higher secondary diploma compared to other Dutch cities. Previous literature considers this as problematic as a higher secondary education diploma is considered as a minimal credential for a successful economic and societal participation. To foster regional accountability and to provide incentives for policy makers, the Ministry of Education uses a 'naming and shaming' approach. For the shamed municipalities – and Almere and Lelystad are both 'shamed' new towns – the Ministry argues that both schools and policy makers could (and should) do better.

This paper argues that an early school leaving comparison with other cities might be unfair if regional and population characteristics differ. The new town policy deliberately attracted low and medium income households in the past. Moreover, differences in the cities' income, size and population growth create differences in city dynamics. When comparing the two new towns to reference cities with similar regional characteristics, we observe that new town students are more frequently non-Dutch, live in single-parent families, more often come from a disadvantageous area and enroll more often in lower education tracks.

To account for student population differences and regional heterogeneity, an iterative matching procedure is applied. For the new town Almere, the results suggest that it would be incorrect to shame Almere because of bad performance, since they perform just as well as comparable cities with comparable student populations. The iterative matching results predict that early school leaving in Lelystad is higher than in the control cities, even though for two of the six control cities these differences are significant. We conclude that statistically mitigating historical differences is necessary, even though it does not necessarily means that shaming is replaced by naming.

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